Claims

I Claim:

1. An air intake system for controlling the flow of air into an internal combustion engine comprising:

a throttle body including a first bore wall defining a first portion of a main bore and a valve mounted within the first portion of the main bore, with the valve being movable to selectively restrict the flow of air through the main bore;

an intake manifold including a second bore wall defining a second portion of the main bore, with the second bore wall having an upstream end, and the manifold further including means for mounting the throttle body relative to the intake manifold such that the first and the second portions of the main bore align with one another, with the intake manifold being downstream of the throttle body, and with the manifold including an EGR inlet adjacent the upstream end of the second bore wall;

an EGR assembly mounted to the EGR inlet; and

air control means, located downstream of the valve within the main bore, for diffusing and redirecting the flow of air within the main bore such that less sound is generated within the intake manifold and less air recirculates back into the first portion of the main bore.

2. The air intake system of claim 1 wherein the air control means includes a plurality of vanes, spaced from one another, forming a first set, extending

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from one of the portions of the main bore wall into the main bore.

3. The air intake system of claim 2 wherein the first set of vanes is mounted to the first bore wall.

4. The air intake system of claim 2 wherein the first set of vanes are mounted to the second bore wall.

5. The air intake manifold of claim 2 wherein the vanes in the first set of vanes extend downstream into the second portion of the main bore.

6. The air intake system of claim 2 wherein the first set of vanes are oriented and extend radially relative to the main bore.

7. The air intake system of claim 6 wherein the first set of vanes taper as they extend away from one of the portions of the bore wall.

8. The air intake system of claim 6 wherein the air control means also include a second set of radial vanes, spaced from one another, extending into a different portion of the main bore than the first set.

9. The air intake system of claim 8 further including an air diffuser plate having a third bore wall defining a third portion of the main bore aligned with the first and the second portions of the main bore, with the air diffuser plate mounted between the throttle body and the intake manifold, and wherein the first and the

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second set of radial vanes are mounted to the third bore wall.

10. The air intake system of claim 8 wherein the average length of first set of radial vanes is shorter than the average length of the second set of radial vanes.

11. The air intake system of claim 2 wherein the first set of vanes are oriented and extend from a portion of the main bore wall parallel to and spaced from one another.

12. The air intake system of claim 11 wherein the air control means also includes a second set of parallel vanes, spaced from one another, extending from a different portion of the bore wall than the first set.

13. The air intake system of claim 12 wherein the air control means includes an air diffuser plate having a third bore wall defining a third portion of the main bore aligned with the first and second portion of the main bore, with the air diffuser plate mounted between the throttle body and the intake manifold wherein the first and second set of parallel vanes are mounted on the third bore wall.

14. The air intake system of claim 1 wherein the second bore wall is defined by a diameter and the EGR inlet is located on the intake manifold within about one diameter of the upstream end of the second bore wall.

15. An air intake system for controlling the flow of air into an internal combustion engine comprising:

a throttle body including a first bore wall defining a first portion of a main bore and a valve mounted within the first portion of the main bore, with the valve being movable to selectively restrict the flow of air through the main bore;

an intake manifold including a second bore wall defining a second portion of the main bore, with the second bore wall having an upstream end, and the manifold further including means for mounting the throttle body relative to the intake manifold such that the first and the second portions of the main bore align with one another, with the intake manifold being downstream of the throttle body, and with the manifold including an EGR inlet adjacent the upstream end of the second bore wall;

an EGR assembly mounted to the EGR inlet;

an air diffuser plate having a third bore wall defining a third portion of the main bore aligned with the first and second portion of the main bore, with the air diffuser plate mounted between the throttle body and the intake manifold; and

air control means, located downstream of the valve within the main bore, for diffusing and redirecting the flow of air within the main bore such that less sound is generated within the intake manifold and less air recirculates back into the first portion of the main bore.

16. The air intake system of claim 15 wherein the air control means includes a plurality of vanes, spaced from one another, forming a first set, extending

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from one of the portions of the third bore wall into the main bore.

17. The air intake system of claim 16 wherein the air control means also includes a second set of vanes mounted to and extending from the third bore wall.

18. A method for controlling the air flowing through a bore of an intake manifold from an upstream located throttle body, having a bore with a valve therein, used with an internal combustion engine, the method comprising the steps of:

orienting the valve to allow air flow past the valve in the bore of the throttle body;

redirecting the air flow to create a generally uniform series of pairs of oppositely oriented adjacent vortices in the air flow downstream of the valve and upstream of at least a portion of the bore in the intake manifold;

feeding EGR gasses into the air flow just downstream of the location where the air flow is redirected;

flowing the air through the bore of the intake manifold; and

adding fuel to the air flow downstream of the location where the EGR gasses feed into the air flow.

19. The method of claim 18 wherein the step of redirecting the air flow includes providing vanes extending into the air flow downstream of the valve.

20. The method of claim 18 wherein the step of redirecting includes providing diffuser means for

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supporting vanes located between the throttle body and the intake manifold, and providing a plurality of vanes extending parallel to each other from the diffuser means into the air flow.

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